

**BEFORE
THE PUBLIC SERVICE COMMISSION OF
SOUTH CAROLINA**

DOCKET NO. 2018-318-E

In the Matter of:)	
)	
Application of Duke Energy Progress, LLC)	DIRECT TESTIMONY OF
for Adjustments in Electric Rate Schedules)	JOSEPH A. MILLER JR.
and Tariffs)	FOR DUKE ENERGY
)	PROGRESS, LLC

I. INTRODUCTION AND OVERVIEW

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Joseph A. Miller Jr. and my business address is 526 South Church Street, Charlotte, North Carolina.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am Vice President of Central Services for Duke Energy Business Services, LLC ("DEBS"). DEBS is a service company subsidiary of Duke Energy Corporation ("Duke Energy") that provides services to Duke Energy and its subsidiaries, including Duke Energy Progress, LLC ("DE Progress" or the "Company") and Duke Energy Carolinas, LLC ("DE Carolinas").

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I graduated from Purdue University with a Bachelor of Science degree in mechanical engineering. I also completed twelve post graduate level courses in Business Administration at Indiana State University. My career began with Duke Energy (d/b/a Public Service of Indiana) in 1991 as a staff engineer at Duke Energy Indiana's Cayuga Station. Since that time, I have held various roles of increasing responsibility in the generation engineering, maintenance, and operations areas, including the role of station manager, first at Duke Energy Kentucky's East Bend Station, followed by Duke Energy Ohio's Zimmer Station. I was named General Manager of Analytical and Investments Engineering in 2010, and became General Manager of Strategic

1 Engineering in 2012 following the merger between Duke Energy and Progress
2 Energy, Inc. I became the Vice President of Central Services in 2014.

3 **Q. WHAT ARE YOUR DUTIES AS VICE PRESIDENT OF CENTRAL**
4 **SERVICES?**

5 A. In this role, I am responsible for providing engineering, environmental
6 compliance planning, generation and regulatory strategy, technical services,
7 and maintenance services, for Duke Energy's fleet of fossil, hydroelectric and
8 solar (collectively, "Fossil/Hydro/Solar") facilities.

9 **Q. HAVE YOU TESTIFIED BEFORE THIS COMMISSION IN ANY**
10 **PRIOR PROCEEDINGS?**

11 A. Yes. I testified before this Commission in DE Progress' 2016 rate case
12 proceeding in Docket No. 2016-227-E (the "2016 Rate Case"). In addition, I
13 testify in DE Progress' and DE Carolinas' South Carolina annual fuel
14 proceedings. I have also testified on multiple occasions on behalf of Duke
15 Energy in proceedings before this and other state commissions.

16 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS**
17 **PROCEEDING?**

18 A. The purpose of my testimony is to support DE Progress' request for a base
19 rate adjustment. My testimony will describe the Company's
20 Fossil/Hydro/Solar generation assets; provide operational performance results
21 for the period of January 1, 2017 through December 31, 2017 (the "Test
22 Period"); update the Commission on capital additions; explain the key drivers
23 impacting operations and maintenance ("O&M") expenses; and provide a

1 high-level view of capital planned for the next few years for
 2 Fossil/Hydro/Solar generation asset investments.

3 **Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?**

4 **A.** The remainder of my testimony is organized as follows:

5 II. FOSSIL/HYDRO/SOLAR FLEET

6 III. CAPITAL ADDITIONS

7 IV. O&M AND OTHER ADJUSTMENTS

8 V. PERFORMANCE

9 VI. CAPITAL BUDGET AND COST DRIVERS

10 VII. CONCLUSION

11 **II. FOSSIL/HYDRO/SOLAR FLEET**

12 **Q. PLEASE DESCRIBE DE PROGRESS' FOSSIL/HYDRO/SOLAR**
 13 **GENERATION FLEET.**

14 **A.** The Company's Fossil/Hydro/Solar fleet consists of 9,217 MWs of owned
 15 generating capacity, made up as follows:

16 Coal-fired - 3,544 MWs

17 Combustion Turbines - 2,816 MWs

18 Combined Cycle - 2,568 MWs

19 Hydro - 227 MWs

20 Solar - 62 MWs¹

21 The 3,544 MWs of coal-fired generation resources represent three
 22 generating stations and a total of seven units. These units are equipped with

¹ This value represents the relative dependable capacity contribution to meeting summer peak demand, based on the Company's integrated resource planning metrics. The nameplate capacity of the Company's solar facilities is 141 MWs.

1 emission control equipment, including selective catalytic reduction (“SCR”)
2 equipment for removing nitrogen oxides (“NO_x”), flue gas desulfurization
3 (“FGD” or “scrubber”) equipment for removing sulfur dioxide (“SO₂”), and
4 low NO_x burners. This inventory of coal-fired assets with emission control
5 equipment enhances the Company’s ability to maintain current environmental
6 compliance and concurrently utilize coal with increased sulfur content;
7 thereby providing flexibility for DE Progress to procure the most cost-
8 effective options for fuel supply.

9 DE Progress has a total of 32 simple cycle combustion turbine (“CT”)
10 units, the larger 14 of which provide 2,183 MWs. These 14 units are located
11 at the Asheville (NC), Darlington (SC), Smith Energy (NC) and Wayne
12 County (NC) facilities, and are equipped with water injection and/or low NO_x
13 burners for NO_x control. The 2,568 MWs shown above as “Combined Cycle”
14 (“CC”) represent four power blocks. The HF Lee Energy Complex CC power
15 block (“HF Lee CC”) has a configuration of three CTs and one steam turbine.
16 The two power blocks located at the Smith Energy Complex (“Richmond
17 CC”) consist of two CTs and one steam turbine each. The Sutton Combined
18 Cycle at Sutton Energy Complex (“Sutton CC”) consists of two CTs and one
19 steam turbine. The four CC power blocks, are equipped with SCR equipment,
20 and all nine CTs have low NO_x combustors.

21 The Company’s hydro fleet consists of 15 units providing 227 MWs of
22 capacity and its solar fleet consists of four sites with 141 MWs of nameplate
23 capacity which provide 62 MWs of relative dependable capacity.

1 **Q. WHAT CAPACITY CHANGES HAVE OCCURRED WITHIN THE**
2 **FLEET SINCE THE 2016 RATE CASE?**

3 A. The Company's recent addition of two new Sutton CTs in July 2017 provides
4 an additional 78 MWs of capacity to the Company's fleet. In addition to plant
5 retirements mentioned in Docket No. 2016-227-E, DE Progress has retired
6 three older CT units at Sutton CT and three older units at Darlington CT,
7 which reduced capacity by 212 MWs.

8 **Q. WERE UPDATES MADE TO THE PROBABLE RETIREMENT**
9 **DATES OF FOSSIL HYDRO PLANTS INCLUDED IN THE RECENT**
10 **DEPRECIATION STUDY?**

11 A. Yes. There were updates made to the probable retirement dates. The Tillery
12 and Blewett hydro plants dates were updated to align with the expiration of
13 the Yadkin-Pee Dee operating license. The Marshall hydro plant date was
14 updated to be consistent with 125-year total projected life. There was a
15 reduction in probable retirement dates for the Roxboro coal plant to better
16 align with the industry information for subcritical coal units and assumptions
17 for future environmental regulations. The Weatherspoon CTs, Blewett CTs
18 and the remaining smaller Darlington units retirement dates were updated due
19 to aging technology at these sites. The probable retirement dates for the
20 Sutton CT units were updated to 2017 to align with the July 2017 in-service
21 date of the new Sutton CTs. Asheville Units 1 and 2 are expected to retire at
22 the end of 2019 when the new Asheville Combined Cycle plant ("Asheville
23 CC") comes online. The Asheville CC, which consists of two efficient 280

1 MW combined-cycle dual fuel 1x1 power blocks, is located in Buncombe
2 County at the site of the Asheville Steam Electric Generating Plant.

3 **III. CAPITAL ADDITIONS**

4 **Q. PLEASE DESCRIBE THE MAJOR FOSSIL/HYDRO/SOLAR**
5 **CAPITAL PROJECTS COMPLETED SINCE THE COMPANY'S LAST**
6 **RATE CASE PROCEEDING.**

7 A. The major Fossil/Hydro/Solar capital projects in service and included in this
8 request total approximately \$201 million. The addition of the Sutton CTs,
9 totaling approximately \$101 million, feature state-of-the-art technology for
10 increased efficiency and reduced emissions. DE Progress also made capital
11 additions at Roxboro Station to convert to a dry bottom ash system to comply
12 with the Coal Combustion Residual Rule ("CCR"), totaling approximately
13 \$100 million.

14 **Q. DID THE COMPANY RECEIVE REGULATORY APPROVAL FOR**
15 **THE CONSTRUCTION OF THE COMPLETED GENERATION**
16 **FACILITIES INCLUDED IN THIS CASE?**

17 A. Yes. The Sutton CTs were granted a certificate of public convenience and
18 necessity ("CPCNs") by the North Carolina Utilities Commission ("NCUC")
19 in Docket No. E-2, Sub 1066.

1 **Q. MR. MILLER, ARE THESE CAPITAL ADDITIONS USED AND**
2 **USEFUL IN PROVIDING ELECTRIC SERVICE TO DE PROGRESS’**
3 **ELECTRIC CUSTOMERS IN SOUTH CAROLINA?**

4 A. Yes. The Company’s new Sutton CTs are commercially operational providing
5 electric service to customers. The new Sutton CTs feature state-of-the-art
6 technology for increased efficiency and reduced emissions, blackstart and fast
7 start capabilities, and provide offsite power to Brunswick Nuclear Station.

8 **Q. IN YOUR OPINION, HAVE THE COSTS RELATED TO THE**
9 **COMPANY’S CAPITAL ADDITIONS BEEN PRUDENTLY**
10 **INCURRED?**

11 A. Yes. The Company controls costs for capital projects and O&M utilizing a
12 cost management program. The Company controls costs through routine
13 executive oversight of project budget and activity reporting with new projects
14 requiring approval by progressively higher levels of management depending
15 on total project cost. The Company controls ongoing project and O&M costs
16 through strategic planning and procurement; efficient oversight of contractors
17 by a trained and experienced workforce; rigorous monitoring of work quality;
18 thorough critiques to drive out process improvement; and, industry
19 benchmarking to ensure best practices are being utilized.

1 **Q. HOW DO CUSTOMERS BENEFIT FROM THE COMPANY'S**
2 **MODERNIZATION EFFORTS FOR THE FOSSIL/HYDRO/SOLAR**
3 **FLEET?**

4 A. Our customers benefit from DE Progress' modernization efforts in multiple
5 ways. Initially, as demonstrated by the Company's resource planning
6 analyses, the Company's fleet modernization efforts have enabled it to
7 continue to provide safe, efficient and reliable service to DE Progress'
8 customers at least reasonable cost. These efforts have also reduced the
9 Company's environmental footprint by adding state-of-the-art technology for
10 reducing emissions, retiring older facilities that lacked environmental
11 equipment and were not economically positioned for needed capital
12 expenditures, and expanding the use of natural gas generation at a time when
13 the natural gas market is providing historically low prices.

14 **IV. O&M AND OTHER ADJUSTMENTS**

15 **Q. PLEASE DESCRIBE THE O&M EXPENSES FOR THE**
16 **FOSSIL/HYDRO/SOLAR FLEET.**

17 A. For the fossil units, approximately 82 percent of DE Progress' required O&M
18 expenditures are fuel-related for the Test Period. The majority of non-fuel
19 expenditures are for labor costs from Company or contract resources that
20 operate, maintain and support the Fossil/Hydro/Solar facilities. Finally, the
21 Company continues to be challenged by costs driven by inflationary pressures
22 for labor and materials.

1 **Q. HOW DOES THE COMPANY CONTROL AND MITIGATE O&M**
2 **EXPENSE INCREASES? PLEASE PROVIDE EXAMPLES.**

3 A. The Company has many efforts in place for controlling and/or minimizing
4 costs. For example, DE Progress optimizes outages based on run time, which
5 has been affected by: (1) changes in the gas market; (2) milder than normal
6 weather during 2016 - 2017; and (3) new generation resources that further
7 increased DE Progress' use of natural gas. This effort has provided savings
8 with labor and material costs.

9 Duke Energy joined forces with other power companies to share best
10 practices and learning opportunities with the Fossil Networking Group
11 ("FNG"). The FNG includes Southern Company, Dominion Resources,
12 American Electric Power and the Tennessee Valley Authority, who along with
13 the Company, have seen benefits around safety and operations.

14 The Company runs its business in a disciplined manner and
15 continuously balances cost management with safety and reliability to provide
16 generation to our customers. Cost to customers is a key concern and the
17 Company's diverse portfolio allows us to reduce overall fuel expense and take
18 advantage of low natural gas prices.

V. PERFORMANCE

Q. PLEASE DISCUSS THE OPERATIONAL RESULTS FOR DE PROGRESS' FOSSIL/HYDRO/SOLAR FLEET DURING THE TEST PERIOD.

A. The Company's Fossil/Hydro/Solar generating units operated efficiently and reliably during the Test Period. Several key measures are used to evaluate the operational performance depending on the generator type: (1) equivalent availability factor ("EAF"), which refers to the percent of a given time period a facility was available to operate at full power, if needed (EAF is not affected by the manner in which the unit is dispatched or by the system demands; it is impacted, however, by planned and unplanned maintenance (*i.e.*, forced) outage time); (2) equivalent forced outage rate ("EFOR"), which represents the percentage of unit failure (unplanned outage hours and equivalent unplanned derated hours); a low EFOR represents fewer unplanned outage and derated hours, which equates to a higher reliability measure; and, (3) starting reliability ("SR"), which represents the percentage of successful starts.

The chart below provides operational results categorized by generator type, as well as results from the most recently published North American Electric Reliability Council ("NERC") Generating Unit Statistical Brochure ("NERC Brochure") representing the period 2013 through 2017. The NERC data reported for the coal-fired units represents an average of comparable units based on capacity rating. Overall, the data in the chart reflects that DE

1 Progress results were comparable or better than the NERC 5-year
2 comparisons.

<i>Generator Type</i>	<i>Measure</i>	<i>Review Period</i>	<i>2013-2017</i>	<i>Nbr of Units</i>
		<i>DEP Operational Results</i>	<i>NERC Average</i>	
Coal-Fired Test Period	EAF	81.0%	81.6%	418
	EFOR	7.7%	8.0%	
2017 Summer	Coal-Fired EAF	90.5%	n/a	n/a
	Combined Cycle EAF	85.1%	n/a	n/a
Total CC Average	EAF	85.7%	85.0%	338
	EFOR	0.86%	5.3%	
Total CT Average	EAF	81.6%	87.8%	776
	SR	99.1%	98.1%	
Hydro	EAF	94.6%	80.4%	1,113

3 **Q. HOW MUCH GENERATION DID EACH TYPE OF GENERATING**
4 **FACILITY PROVIDE FOR THE TEST PERIOD?**

5 A. For the Test Period, DE Progress' system total generation was approximately
6 61.4 million megawatt-hours ("MWHs"). The Fossil/Hydro/Solar fleet
7 provided approximately 31.9 million MWHs, or approximately 52 percent.
8 The breakdown includes approximately 14 percent contribution from the coal-
9 fired stations, 37 percent from gas facilities, and approximately 1 percent from
10 renewable facilities, primarily hydro.

11 **Q. IN YOUR OPINION, HAS DE PROGRESS PRUDENTLY OPERATED**
12 **ITS FOSSIL/HYDRO/SOLAR FLEET DURING THE TEST PERIOD?**

13 A. Yes. The Company's performance data supports the conclusion that DE
14 Progress has reasonably and prudently operated and maintained its
15 Fossil/Hydro/Solar resources to maximize unit availability, minimize fuel
16 costs and provide safe and reliable service to its customers.

1 **VI. CAPITAL BUDGET AND COST DRIVERS**

2 **Q. WHAT IS THE ANTICIPATED CAPITAL BUDGET FOR**
3 **FOSSIL/HYDRO/SOLAR OPERATIONS OVER THE NEXT THREE-**
4 **YEAR PERIOD?**

5 A. In order to continue to provide reliable service to customers, DE Progress
6 plans to invest approximately \$730 million in its Fossil/Hydro/Solar fleet
7 during the period 2019 - 2021. Key efforts included in this projection are costs
8 to complete the new Asheville CC and maintenance capital on existing plants.

9 **VII. CONCLUSION**

10 **Q. IS THERE ANYTHING YOU WOULD LIKE TO SAY IN CLOSING?**

11 A. Yes. The Company has a proven history of experience-based, safe, quality
12 and cost competitive operations of a diverse generation portfolio. The
13 Company has been active and diligent in its modernization efforts to ensure
14 the right investments that continue, and build on, DE Progress' solid history of
15 safely providing reliable, efficient and cost-effective generation, while
16 reducing environmental impacts and ensuring compliance with state and
17 federal regulations. The diversity of the Company's generation assets provides
18 significant benefit to customers in an economic dispatch environment,
19 especially with the natural gas market continuing to experience low prices.
20 DE Progress is positioned to continue as a leader in the industry with a solid
21 base of knowledge and experience. This base rate increase will allow the
22 Company to continue the tradition of operational excellence and focus on safe
23 operations and reliable generation.

- 1 **Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?**
- 2 A. Yes.